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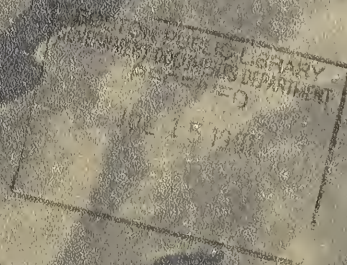
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# BOSTON WATER AND SEWER COMMISSION



ANNUAL REPORT 1990



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**Boston Water and  
Sewer Commission**



425 Summer Street  
Boston, MA 02210-1700  
617-330-9400  
Fax 617-330-5167

June 21, 1991

Dear Friend:

The Boston Water and Sewer Commission 1990 Annual Report tells the story of success.

Once again the Commission has successfully responded to economic and financial challenges posed both by the local economic conditions and by the Massachusetts Water Resources Authority's rate increases.

Our story is one of commitment and hard work...meeting customer satisfaction, systematic infrastructure maintenance and quality service delivery.

Additionally, our story is one of strong management and dedicated, successful financial operations which have positioned the Commission to continue to cushion the impact of future challenges.

We are pleased to share our story and success with you and invite you to share your comments and questions with us.

Very truly yours,

Patricia A. Fahy  
Acting Executive Director

Enclosure

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In 1978, the Boston Water and Sewer Commission (BWSC) was created to address an aging water and sewer infrastructure and to provide the City of Boston with some of the cleanest water in the nation. Today, our tradition of excellence continues. The BWSC has established a standard for quality, cost-effective service, well-maintained facilities, and impressive capital improvement programs.

Our water originates at the Quabbin Reservoir and flows through miles of pipeline before reaching Boston and the Commission's 1,182 mile water system and our 1,300 mile wastewater collection system. In Boston's climate of fiscal austerity, operating, maintaining and improving these systems is an ongoing challenge—but a challenge which we continue to successfully meet.

As the 1990s unfold, most public agencies face difficult financial constraints and adjustments. We are proud to announce that the BWSC has been operating at a surplus for the sixth year in row. Our solid fiscal planning and budgeting have enabled us to increase our reserves and improve our debt service coverage. We attribute these successes to a dedicated management team and a committed, well-trained work force.

In addition to our financial successes, our operational accomplishments are many. We have seen a substantial reduction in unaccounted-for water and have made important strides in the critical area of metering. We have made additional commitments to environmental protection which have significantly contributed to the Boston Harbor cleanup. These achievements are meaningful and important, but serve only to mark out the foundation for our goals in the coming years.

As we move forward in the new decade, we take pride in our tradition of excellence, and stand firm in our commitment to progress.

Roxana Marchosky  
Chairperson



Mary Nee  
Commissioner



Victoria L. Williams  
Commissioner



Robert J. Ciolek  
Executive Director

A handwritten signature in dark ink, reading "Robert J. Ciolek".

Patricia A. Fahy  
Deputy Director

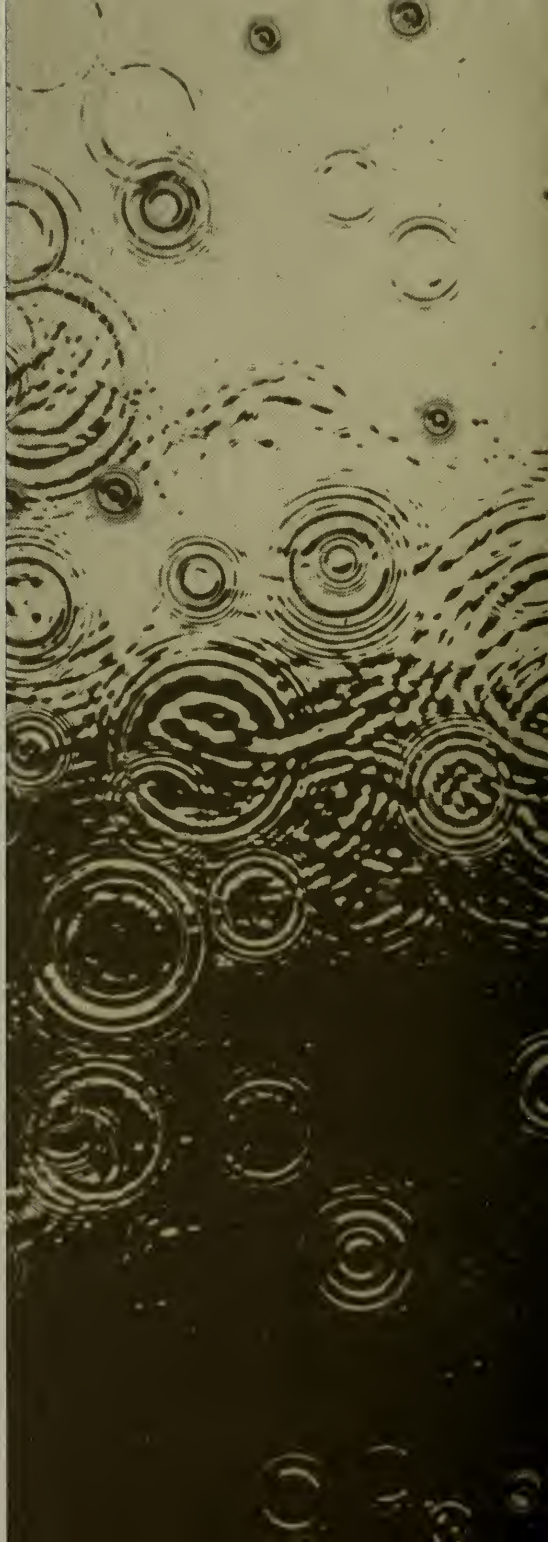



## Accounting for Precious Resources

The Boston Water and Sewer Commission (BWSC) provides water distribution, wastewater collection and storm drainage services on a retail basis to the City of Boston, encompassing an area of approximately 45 square miles. The water distribution system serves approximately 87,900 accounts through 1,180 miles of water main. The wastewater collection system collects wastewater and stormwater from 20,500 acres through approximately 90,000 wastewater connections and 1,340 miles of sewers. Over 75% of these sewers consist of separated storm and sanitary lines.

The BWSC obtains its bulk water supply from the Massachusetts Water Resources Authority (MWRA), which supplies water from the Quabbin, Wachusett and Ware River Watersheds, to the distribution system for the City of Boston.

Unaccounted-for water—the difference between the amount of water purchased from the MWRA and the amount actually billed to BWSC customers—is an ongoing issue of concern to the Commission. Since its inception in 1978, the Commission has made substantial progress in reducing such water loss. Unaccounted-for water has been reduced from 44% in 1978 to 27% in 1990, a substantial improvement. This progress has been made through efforts in several areas.





## Unaccounted-for Water Task Force

In 1990 the Commission created the Unaccounted-for Water Task Force, whose mandate is to research and analyze existing areas of unaccounted-for water and to make recommendations to help eliminate these losses. The Task Force has already presented some preliminary recommendations. One such recommendation currently in place is the Meter Downsizing Program. Larger meters do not always capture all of low flows during non-peak consumption periods. This is an important cause of unaccounted-for water. Since its implementation in August, over 200 three-inch-and-larger meters have been replaced by smaller meters able to detect low flows. The results, while still preliminary, are extremely positive and cost-effective. Other recommendations from the Task Force promise equally substantial savings.

## Leak Detection, Renewal and Replacement Program

During its first decade, the Commission devoted considerable time and energy to emergency repairs necessitated by a water distribution system, parts of which are over 100 years old. The majority of this work has been completed. Today, efforts are focused on a Renewal and Replacement Program with long-range planning for maintenance and rehabilitation reconstruction. As part of this program, the Commission coordinates its efforts with street reconstruction and building projects to help eliminate neighborhood disruptions.

## High-Volume Leak Detection and Repair Program

In 1990, the BWSC was able to survey the entire 1,182 miles of delivery pipes for leaks, an undertaking which in the past has required two to three years to complete. The Commission reduced water leakage significantly by prioritizing the repair of leaks and completing all repairs within an efficient timeframe. In 1990, this program saved 3.6 million gallons of water each day, which would have otherwise been lost through leakage.

The Commission's Leak Detection and Renewal and Replacement programs have received national recognition for their effectiveness in water savings. We will continue to build upon these existing successes, incorporating Task Force recommendations into the Commission's long-range planning.

## Renewing Our Commitment to Fiscal Strength and Integrity

The Commission renews its commitment to sound management and financial structure. The Commission will continue its practices of using conservative budgeting assumptions, funding capital expenses from both debt and rate revenue, sustaining adequate reserves and substantial coverage ratios, and most of all, ensuring a strong balance sheet. With strong reserves and sound fiscal policies, the Commission produced a net operating surplus for 1990 of over \$7 million. Because of its strong management, financial operations, and stable customer base, the Commission has received bond ratings of A/A- from Moody's Investor Services and Standard and Poors, respectively.

### Significant Contributions to Operating and Debt Service Reserve Funds

These contributions include additional subsidies to the Stabilization Fund, which can be used to stabilize rates or fund any shortfall in debt service. In the midst of a regional recession, the Commission added \$2 million to this fund. At the end of 1990, operating and debt service reserve funds totaled over \$50 million.

We have worked assiduously and wisely to achieve our solid financial position, and will continue our tradition of conservative approaches to budgeting and planning, both in estimating revenues and in forecasting and controlling expenses. We are confident that this foundation of prudent financial management will result in a continuation of a strong fiscal position for years to come.

### Effective Billing and Collection System

As rates continue to rise, the metering, billing and collections processes have become an increasingly important focus of the Commission. The Commission employs a fully integrated approach to its collections program, including dunning letters and phone contact, termination of water service and litigation. In 1990, the Commission reached an agreement with the City of Boston to pursue tax takings on any property for which payment is overdue.



## Independent Auditors Report


### **Boston Water and Sewer Commission:**

We have audited the accompanying balance sheet of the Boston Water and Sewer Commission (the "Commission") as of December 31, 1990 and the related statements of operations, Commission equity and cash flows for the year then ended. These financial statements are the responsibility of the Commission's management. Our responsibility is to express an opinion on these financial statements based on our audit. The financial statements of the Commission as of December 31, 1989, were audited by other auditors whose report thereon dated April 27, 1990, expressed an unqualified opinion on those statements.

We conducted our audit in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the 1990 financial statements referred to above present fairly, in all material respects, the financial position of the Commission at December 31, 1990 and the results of its operations and its cash flows for the year then ended in conformity with generally accepted accounting principles.

Our audit was made for the purpose of forming an opinion on the basic financial statements taken as a whole. The supplemental schedule of revenues and expenses for the year ended December 31, 1990 is presented for purposes of additional analysis and is not a required part of the basic financial statements. Such information has been subjected to the auditing procedures applied in our audit of the basic financial statements and, in our opinion, is fairly stated in all material respects in relation to the basic financial statements taken as a whole.

A handwritten signature in cursive script, appearing to read "KPMG Peat Marwick", is written in dark ink.

**KPMG Peat Marwick**  
Boston, Massachusetts  
April 12, 1991

# Balance Sheets

December 31, 1990 and 1989

Assets	1990	1989
Current assets:		
Cash and cash equivalents (note 8)	\$ 480,578	503,784
Accounts receivable:		
Customers, less allowances of		
\$17,382,603 in 1990 and		
\$12,517,089 in 1989	51,296,234	45,591,527
Unbilled earned revenues, less allowances of		
\$1,908,716 in 1990 and		
\$1,732,419 in 1989	11,916,310	10,838,488
Construction grants receivable	5,887,247	12,893,326
Prepaid expenses	483,109	1,521,537
Deferred charges (note 2)	9,311,472	12,594,773
<b>Total current assets</b>	<b>79,374,950</b>	<b>83,943,435</b>
Trusteed investments (notes 4 and 8)	113,828,686	107,513,209
Nontrusteed investments (notes 4 and 8)	41,223,681	50,004,590
Property, plant and equipment, net	283,041,005	256,914,295
Deferred charges (note 2)	26,326,567	27,355,384
Bond issue costs, net	4,691,125	4,451,430
<b>Total assets</b>	<b>\$ 548,486,014</b>	<b>530,182,343</b>
Liabilities and Commission Equity		
Current liabilities:		
Payable from current assets:		
Accounts payable	\$ 14,765,186	10,437,048
Other accrued liabilities	6,491,070	7,192,207
<b>Total</b>	<b>21,256,256</b>	<b>17,629,255</b>
Payable from trustee assets:		
Massachusetts Water Resources Authority assessment	3,175,692	2,976,492
Current portion of City of Boston bonds	380,000	585,000
<b>Total</b>	<b>3,555,692</b>	<b>3,561,492</b>
Current portion of revenue bonds	3,540,000	3,305,000
Deferred credits (note 2)	24,428,296	18,426,107
<b>Total current liabilities</b>	<b>52,780,244</b>	<b>42,921,854</b>
Long-term debt (note 4):		
City of Boston bonds	1,330,000	1,710,000
Revenue bonds	238,152,737	241,143,511
Deferred long-term credits (note 2)	136,304,850	125,570,982
Other long-term liabilities	1,957,562	1,249,247
<b>Total other liabilities</b>	<b>377,745,149</b>	<b>369,673,740</b>
Commission equity:		
Contributed capital	117,960,621	117,586,749
Commitments and contingencies (notes 10 and 11)		
<b>Total liabilities and commission equity</b>	<b>\$ 548,486,014</b>	<b>530,182,343</b>

# Statements of Operations

For the Years Ended December 31, 1990 and 1989

	1990	1989
Operating revenues:		
Water and sewer usage	\$ 136,822,659	125,251,504
Fire pipe	1,845,393	1,678,379
Other	2,489,763	870,533
<b>Total operating revenues</b>	<b>141,157,815</b>	<b>127,800,416</b>
Operating expenses:		
Operations	47,824,134	46,472,452
Maintenance	6,350,149	4,831,816
MWRA Assessment	61,520,881	54,716,374
Depreciation and amortization	7,090,212	7,136,591
<b>Total operating expenses</b>	<b>122,785,376</b>	<b>113,157,233</b>
Excess operating revenues	18,372,439	14,643,183
Other revenues	16,441,629	13,132,786
Excess revenues before interest expense	34,814,068	27,775,969
Interest expense	20,066,709	16,089,852
Excess revenues before depreciation add-back and transfer requirements	14,747,359	11,686,117
Add depreciation on fixed assets acquired by grants	1,580,562	1,490,992
Excess revenues before transfer requirements	16,327,921	13,177,109
Excess revenues used to fund reserves and other deferrals (note 2)	(15,676,198)	(9,740,717)
Accumulated revenues used to offset future rates - beginning of year	6,432,956	2,996,564
<b>Accumulated revenues used to offset future rates - end of year</b>	<b>\$ 7,084,679</b>	<b>6,432,956</b>

See accompanying notes to financial statements.

# Statements of Commission Equity

For the Years Ended December 31, 1990 and 1989

	Contributed Capital	Accumulated Deficit	Total Commission Equity
Balance, January 1, 1989	\$ 105,768,355	(5,546,696)	100,221,659
Contributions in aid of construction	13,309,386	—	13,309,386
Depreciation of related property	(1,490,992)	—	(1,490,992)
Prior year rate deficits recovered in 1989	—	4,856,609	4,856,609
Recoveries on pre-commission receivables written-off in prior years	—	690,087	690,087
Balance, December 31, 1989	117,586,749	—	117,586,749
Contributions in aid of construction	1,954,434	—	1,954,434
Depreciation of related property	(1,580,562)	—	(1,580,562)
Balance, December 31, 1990	<u>\$ 117,960,621</u>	<u>—</u>	<u>117,960,621</u>



# Statements of Cash Flows

For the Years Ended December 31, 1990 and 1989

	1990	1989
Excess operating revenues	\$ 18,372,439	14,643,183
Adjustment to reconcile operating income to net cash:		
Excess revenues used to fund reserves and other deferrals	(16,327,921)	(13,177,109)
Depreciation and amortization	7,090,212	7,136,591
Recovery of accumulated deficit	—	5,546,696
Change in assets and liabilities:		
Accounts receivable	(5,704,707)	(7,193,568)
Unbilled earned revenues	(1,077,822)	(3,704,015)
Construction grants receivable	7,006,079	(1,109,102)
Prepaid expenses	343,879	(447,558)
Deferred charges	3,395,131	(997,634)
Accounts payable	4,328,138	4,855,989
Other accrued liabilities	(701,137)	(1,473,561)
MWRA assessment	199,200	481,265
Deferred credits	16,736,057	15,901,883
Other long-term liabilities	708,314	(424,879)
Other	60,099	—
Net cash provided by operating activities	34,427,961	20,038,181
Investing activities:		
Purchase/(sale) of investments	2,465,432	(32,161,911)
Other revenues	16,441,629	13,132,786
Net cash provided by (used for) investing activities	18,907,061	(19,029,125)
Capital and related financing activities:		
Additions to property, plant and equipment	(31,905,179)	(33,846,150)
Proceeds from issuance of bonds	—	39,269,678
Payment on bonds, including current maturities	(3,890,000)	(3,115,000)
Payment of debt issuance costs	—	(779,000)
Proceeds of contributions in aid of construction	1,954,434	13,309,386
Payment of bond interest	(19,517,483)	(15,543,822)
Net cash used for capital and related financing activities	(53,358,228)	(704,908)
Net increase (decrease) in cash	(23,206)	304,148
Cash and cash equivalents at beginning of year	503,784	199,636
Cash and cash equivalents at end of year	<u>\$ 480,578</u>	<u>503,784</u>
Supplemental disclosure of cash flow information:		
Cash paid during the year for interest, net of amount capitalized	<u>\$ 16,313,200</u>	<u>17,398,500</u>

## Notes to Financial Statements

December 31, 1990 and 1989

### (1) Organization, Basis of Presentation and Summary of Significant Accounting Principles

The Boston Water and Sewer Commission (the "Commission") has the responsibility to provide water and wastewater services on a fair and equitable basis in the City of Boston (the "City") as required under the Boston Water and Sewer Reorganization Act of 1977 (the "Enabling Act").

Under the Enabling Act, the Commission is subject to regulation with respect to rates, accounting and other matters, where applicable, by the Board of Commissioners (the "Board"). The Board regulates the rates that the Commission can charge its customers for water and sewer usage. These rates charged to customers are based on the cash required for the Commission's operations, debt service, and reserve contributions. To comply with the financial reporting requirements of the Board, however, the accompanying financial statements are presented on a basis that is consistent with generally accepted accounting principles (GAAP) for regulated utilities. This reporting practice provides for the recognition of certain costs in accounting periods other than those in which the costs are incurred.

To accommodate this rate making process, the Commission follows the accounting standards set forth in Financial Accounting Standards Board Statement No. 71 ("FAS-71"), "Accounting for the Effects of Certain Types of Regulation". FAS-71 allows certain (a) revenues provided for future allowable costs to be deferred until the costs are actually incurred (deferred credits) and (b) costs incurred to be capitalized if future recovery is reasonably assured (deferred charges). Revenues and current expenses appearing on the Supplemental Schedule of Revenues and Expenses are presented in the same format as utilized in the Commission's budgeting and rate setting process. The revenues and expenses show on the Statement of Operations are presented prior to adjustments required by FAS-71 (see note 2). A more detailed reconciliation between the revenues and expenses of these two operating statements is provided below.

	Revenues	Expenses
As presented in the Statement of Operations		
Operating revenues/expenses	\$ 141,157,815	122,785,376
Other revenues/expenses	16,441,629	20,066,709
<b>Total</b>	<b>157,599,444</b>	<b>142,852,085</b>
Reclassifications and deferrals		
Contribution to reserves	—	5,193,000
Provision for working capital	—	1,579,199
Bad debt expense	(16,261,594)	(16,261,594)
Excess depreciation over bond payments	—	(3,200,212)
Interest expense	—	(3,334,055)
Interest income	(6,364,985)	—
Capital expenditures	—	7,967,383
Excess revenue used to offset current rates	6,432,956	—
Other deferrals	(100,248)	(574,911)
<b>As presented in the Supplemental Schedule</b>	<b>\$ 141,305,573</b>	<b>134,220,895</b>

The Enabling Act requires that any net surplus, as defined by the rate setting process, must either be returned to the City or applied to offset water and sewer rates for the following year. The Commission has applied \$7,084,678 and \$6,432,956 for the years ended December 31, 1990 and 1989, respectively, to offset rates in the respective subsequent years.

#### (a) Revenue and Earned Revenue in Excess of Billings

Water and sewerage fees are billed to users of the systems on a quarterly cycle basis. Revenues are accrued for periods between the termination of billings for the various cycles and the end of the year.

#### (b) Trusteed and Nontrusteed Investments

These assets, consisting of direct and unconditionally guaranteed short-term obligations of the U.S. Government, repurchase agreements and money market units secured by government securities, are stated at amortized cost plus accrued interest.

#### (c) Property, Plant and Equipment

Property, plant and equipment is stated at cost. Depreciation is provided on the straight-line method based upon the estimated useful lives of the various classes of assets. Maintenance and repairs are charged to expense as incurred. Major renewals or betterments are capitalized and depreciated over their estimated useful lives.

The Commission capitalizes interest costs during construction of assets for its own use. Interest totalling approximately \$1,094,000 and \$442,000 was capitalized in 1990 and 1989, respectively.

#### (d) Depreciation

The ranges of estimated useful lives used in computing depreciation are as follows:

	Years
Water:	
Works	60 to 100
Meters and hydrants	10 to 40
Sewerage:	
Works	40 to 75
Pumping station	35
Other	3 to 15

#### (e) Commission Equity

Contributions from governmental agencies, individuals and cities received in aid of specific construction projects, which are not refundable, are included in Commission equity as contributed capital. Accordingly, depreciation of the related property is charged directly to Commission equity and is not included in the accompanying statements of operations.

In 1989, the Commission recovered through revenues an accumulated deficit of \$5,546,696. This recovery was net of all previous receipts that represented payment of pre-Commission receivables previously written off to the accumulated deficit.

#### (f) Cash Equivalents

The Commission considers all highly liquid, short-term cash investments with a maturity of less than three months to be cash equivalents for purposes of the cash flow statement.

### (1) Bond Issue Costs

Expenses related to the issuance of bonds are amortized on a weighted-average basis over the life of the bonds, which approximates the effective interest method.

### (2) Reclassifications

Certain amounts in the 1989 financial statements have been reclassified to conform to the 1990 presentation.

### (2) Deferred Charges and Credits

As discussed in note 1, the application of FAS-71 results in certain revenues and expenses being removed from the Statement of Operations and reflected in the balance sheet as either deferred charges or deferred credits. The current year revenues and expenses that have been removed from the Statement of Operations and included on the balance sheets as part of deferred charges or deferred credits appear in the line "Excess revenues used to fund required reserves and other deferrals" on the Statement of Operations. The major components of this amount are:

	1990	1989
Contributions to reserves	\$ 5,193,000	3,213,000
Provision for working capital	1,579,199	6,294,360
Principal payments on long-term debt	3,890,000	3,115,000
Interest paid from escrow funds, net	(3,342,727)	(5,771,050)
Capital expenditures	7,967,383	3,882,321
Depreciation	(4,197,907)	(4,366,778)
Interest income on project and escrow funds	6,364,985	5,146,168
Other	(1,777,735)	(1,772,304)
	<u>\$ 15,676,198</u>	<u>9,740,717</u>

The major components of the deferred charges included in the accompanying balance sheet are as follows:

	1990	1989
Current deferred charges:		
Accrued interest expenses	\$ 6,844,425	10,186,561
Accrued pension expenses	215,755	201,833
Accrued legal claims	427,835	427,835
Accrued vacation and sick time expenses	965,831	818,544
Debt extinguishment expenses	857,626	960,000
<b>Total current deferred charges</b>	<u>\$ 9,311,472</u>	<u>12,594,773</u>
Noncurrent deferred charges:		
Accrued pension expense	\$ 16,321,068	16,541,824
Accrued legal claims	1,664,822	1,664,822
Debt extinguishment expense	8,340,677	9,148,738
<b>Total noncurrent deferred charges</b>	<u>\$ 26,326,567</u>	<u>27,355,384</u>

The major components of the deferred credits included in the accompanying balance sheet are as follows:

	1990	1989
Current deferred credits:		
Reserve deposits made under the terms of the Bond Indenture (note 4)	\$ 16,806,000	11,573,162
Prior year surplus deferred to subsequent year	7,084,678	6,432,956
Other	537,618	419,989
<b>Total current deferred credits</b>	<u>\$ 24,428,296</u>	<u>18,426,107</u>
Noncurrent deferred credits:		
Revenues raised for capital improvements and payments on long-term debt	\$ 78,804,981	69,626,118
Working capital at inception of Commission	28,985,575	28,985,575
Provision for additional working capital	26,274,294	24,734,963
Self insurance and other	2,240,000	2,224,326
<b>Total noncurrent deferred credits</b>	<u>\$ 136,304,850</u>	<u>125,570,982</u>

### (3) Property, Plant and Equipment

The cost of water and sewerage plant and equipment in service and related accumulated depreciation at December 31, 1990 and 1989 are as follows:

	1990	1989
Water:		
Works	\$ 104,536,336	90,153,870
Meters and hydrants	12,473,263	10,762,835
<b>Total water</b>	<u>117,009,599</u>	<u>100,916,705</u>
Sewerage:		
Works	166,446,479	136,939,338
Pumping station	6,798,216	6,798,216
<b>Total sewerage</b>	<u>173,244,695</u>	<u>143,737,554</u>
Other	14,139,983	11,863,301
<b>Total</b>	<u>304,394,277</u>	<u>256,517,560</u>
Less accumulated depreciation	41,137,026	35,647,669
<b>Total</b>	<u>263,257,251</u>	<u>220,869,891</u>
Construction in progress	19,783,754	36,044,404
<b>Total</b>	<u>\$ 283,041,005</u>	<u>256,914,295</u>

12 (4) Long-term Debt

At the time of its creation, the Commission assumed general obligation certificates of indebtedness of the City (the "City bonds") pertaining to the water and sewerage works systems. Payments of principal and interest are made directly to the City in accordance with the original maturity and interest schedules.

A summary of these City bonds as of December 31, 1990 and 1989 follows:

	<u>1990</u>	<u>1989</u>
City Bonds, bearing interest at rates ranging from 5.1% to 9.5% with maturity dates ranging from December 1990 to December 1999	\$ 1,710,000	2,295,000
Less current installments	380,000	585,000
<b>Total general obligation debt of the City, net of current installments</b>	<u><b>\$ 1,330,000</b></u>	<u><b>1,710,000</b></u>

A summary of revenue bonds of the Commission follows:

	<u>1990</u>	<u>1989</u>
1984 Series A, bearing interest at rates ranging from 6.75% to 10.0%, with maturity dates ranging from January 1, 1991 to January 1, 2001	\$ 21,105,000	22,065,000
1985 Series A, bearing a variable interest rate (5.85% and 6.6% at December 31, 1990 and 1989, respectively), maturing in two equal amounts on November 1, 2014 and 2015 and requiring annual sinking fund contributions through 2014	49,170,000	49,675,000
1986 Series A, bearing interest at rates ranging from 4.75% to 7.88%, with maturity dates ranging from November 1, 1991 to 2015	80,605,000	81,735,000
1988 Series A, bearing interest at rates ranging from 6.0% to 7.4%, with maturity dates ranging from November 1, 1991 to 2008	57,175,000	57,775,000
1989 Series A, bearing interest at rates ranging from 5.85% to 7.1%, with maturity dates ranging from November 1, 1991 to 2019	39,890,000	40,000,000
	<u><b>247,945,000</b></u>	<u><b>251,250,000</b></u>
Less:		
Current installments	3,540,000	3,305,000
<b>Total long-term debt</b>	<u><b>244,405,000</b></u>	<u><b>247,945,000</b></u>
Less:		
Unamortized issue discount	6,252,263	6,801,489
<b>Total revenue debt</b>	<u><b>\$ 238,152,737</b></u>	<u><b>241,143,511</b></u>

The 1984 Series A Bonds were issued in order to refund a series of 1980 System Revenue Bonds. Under the Refunding Trust Agreement, the 1980 Bondholders have no right, title, interest or liens in any other funds, real or personal property or assets of the Commission other than the amounts held under the Refunding Trust Agreement and pledged for their benefit thereunder.

The 1985 Series A Bonds were issued to provide funds for projects under the Commission's ongoing capital improvement programs and other capital and operating needs. The Commission maintains a letter of credit to guarantee the principal and interest payments on these variable interest rate bonds in the event that the Commission is unable to make such payments.

In August 1986, the Commission issued 1986 Series A General Revenue Bonds (1986 Bonds). This issue was structured as a rolling cross-over refunding and new money issue. The 1986 bonds provide funds for the Commission's ongoing capital improvement program and other capital and operating needs. In addition, a portion of the proceeds of the 1986 bonds were deposited to the 1986 Series A Escrow Account to provide for the principal payments of the 1985 Series A Bonds and the interest payments of the 1986 bonds as they come due. Thus, the Commission is allowed to pay the low short-term interest rates provided under the 1985 bonds and has secured a guaranteed redemption for the 1985 bonds.

In December 1988, the Commission issued 1988 Series A Bonds to provide for the defeasance of a portion of the Commission's General Revenue Bonds 1984 Series A to provide supplemental funding for the Operating Reserve Fund and to pay costs of issuance. Under the 1988 Refunding Trust Agreement, the Commission deposited sufficient funds with the 1984 Bond Trustee to pay when due the principal and interest on the refunded bonds until the first call date, January 1, 1995. As a result, the refunded bonds are no longer outstanding under the Commission's Resolution.

In December 1989, the Commission issued the 1989 Series A Bonds to provide funds for projects, undertaken as part of the Commission's ongoing capital improvement program.

In the aggregate \$106,320,000 remains outstanding at December 31, 1990 on the portions of the 1980 and 1984 issues that were defeased "in-substance".

The Resolution Establishing Issue of Revenue Bonds adopted by the Commission on December 6, 1984 places certain restrictions on the Commission's operations. It requires that rates, charges and fees be set at a level sufficient to meet a net revenue test on an annual basis and requires that all revenues, as defined, be deposited in a Revenue Fund maintained by a fiscal agent. Amounts held in the Revenue Fund are to be disbursed to and withdrawn from other funds provided for in the Resolution. The Resolution provides that all excess cash be held in the Revenue Fund until the last business day of the fiscal year. At that time, if certain covenants are met, the Commission has the option to remove any excess cash from the Revenue Fund and place such cash in a fund not restricted by the Resolution.



The Commission has options for early redemption of revenue bonds starting in 1995 at prices ranging from 100% to 103% of face value. In addition, in compliance with the Resolution, the Commission has established both trustee and nontrustee funds with investments, principally short-term securities, which are restricted for payment of specified liabilities, capital projects or other costs of operations. The major components of the trustee and nontrustee amounts at December 31, 1990 and 1989 are as follows:

	1990	1989
Trustee:		
U.S. Treasury notes	\$ 31,848,636	17,004,351
U.S. Treasury bills	—	8,546,636
Other government obligations	7,427,618	11,110,798
Money market and cash investments	11,336,912	23,758,828
Commercial paper	58,601,842	47,092,596
Repurchase agreements	4,613,678	—
	<b>113,828,686</b>	<b>107,513,209</b>
Nontrustee:		
U.S. Treasury notes	9,921,220	1,546,681
U.S. Treasury bills	—	1,092,642
Money market and cash investments	16,964,007	12,572,529
Commercial paper	687,747	—
Repurchase agreements	13,650,707	34,792,738
	<b>41,223,681</b>	<b>50,004,590</b>
	<b>\$ 155,052,367</b>	<b>157,517,799</b>

Annual sinking fund requirements and debt principal maturities for all future years are as follows:

	City Bonds	Revenue Bonds	Total
1991	\$ 380,000	3,540,000	3,920,000
1992	380,000	4,060,000	4,440,000
1993	270,000	4,360,000	4,630,000
1994	270,000	4,685,000	4,955,000
1995	195,000	5,060,000	5,255,000
Thereafter	215,000	226,240,000	226,455,000
	<b>\$ 1,710,000</b>	<b>247,945,000</b>	<b>249,655,000</b>

#### (5) Massachusetts Water Resources Authority

The Massachusetts Water Resources Authority (the "Authority") provides all the Commission's water supply and sewer treatment requirements and assesses the Commission for a portion of its actual operating and capital expenses. The assessment is based on the Authority's fiscal year (July 1 to June 30) and payments are due to the Authority in four installments in September, November, March and May. Interest is not charged on the outstanding balance. The amounts included in the operating statement for the MWRA assessments for 1990 and 1989 are as follows:

	1990	1989
Assessments allocated on:		
Water usage	\$ 22,880,297	21,928,747
Wastewater usage	38,640,584	32,787,627
<b>Total</b>	<b>\$ 61,520,881</b>	<b>54,716,374</b>

During 1990 and 1989, over 73% and 70%, respectively of water received from the Authority was billable to customers. Since its inception, the Commission has increased the percentage of billable water from 52% in 1977 to over 73% in 1990 and is continuing to take steps to improve the amount of water billable, including replacement of old and defective meters and a comprehensive leak detection and repair program.

#### (6) Transactions with the City of Boston

The Commission's ongoing program to meter City facilities has resulted in billings to nine City departments based on actual consumption of \$2,618,000 and \$1,391,000 in 1990 and 1989, respectively. The remaining City departments were billed \$287,000 and \$1,593,000 based on estimated consumption during 1990 and 1989, respectively.

The City provides services to the Commission, including paving and facilities rental. Operating costs billed by the City were \$2,433,000 and \$520,000 during both 1990 and 1989. Capital costs billed by the City were \$4,672,000 and \$763,000 during 1990 and 1989, respectively.

## 17 Retirement Benefits

The Commission provides retirement benefits to substantially all of its employees through a pension trust fund (the "Trust Fund") or the State-Boston Retirement System (the "Boston System"). A dispute concerning the Commission's past and future obligations to all Commission employees covered by the Boston System was settled in 1986, resulting in a payment of \$19,100,000 to the Boston System. This payment was funded primarily through 1985 and 1986 bond proceeds and is recorded as a deferred charge that will be recovered through future rates.

As part of the settlement with the Boston System, the Commission annually reimburses the City for the Commission's share of pension benefits paid to Commission employees. The Commission's share is based upon the proportion of each employee's total years of creditable service that were spent with the Commission. Employees become 100% vested after 10 years of creditable service as defined by Chapter 32 of the Massachusetts General Laws.

The Commission's covered payroll was approximately \$16,924,000 and \$14,739,000 in 1990 and 1989, respectively. Total payroll for all Commission employees was approximately \$18,629,000 and \$17,443,000 in 1990 and 1989, respectively. In compliance with Statement No. 5 of the Governmental Accounting Standards Board, as of January 1, 1991 and 1990, the Commission updated its actuarial valuation originally performed as of January 1, 1989. The valuation and subsequent updates were based on 98 retired and inactive employees, 153 vested active employees and 365 non-vested active employees. Employee contributions are defined under Massachusetts General Laws, Chapter 32. Total employee contributions were approximately \$1,200,000 and \$1,017,000 or 6.4% and 6.9% of covered payroll in 1990 and 1989, respectively.

As required by the Commission's Enabling Act, employee pension contributions are transferred to the Boston System and are either returned to employees upon termination or, for vested employees, are used to defray a portion of the total retirement benefit. The Commission's policy is to make additional contributions to the Trust Fund based upon the actuarially determined cost of future benefits, net of employee contributions.

Trust fund assets at December 31, 1990 and 1989 are as follows:

	1990	1989
Assets (at fair market value):		
Common stock	\$ 9,740,375	8,740,563
U.S. Government securities	—	4,378,249
Corporate bonds and notes	—	1,924,029
Short-term investments	—	1,591,600
Cash	609,045	264,957
Other	6,724,988	289,817
<b>Total</b>	<b>\$ 17,074,408</b>	<b>17,189,215</b>

Net assets in excess of the pension benefit obligation applicable to the Commission's employees, as of January 1 are determined as follows:

	1991	1990
<b>Net assets available for benefits</b>	<b>\$ 17,074,408</b>	<b>17,189,215</b>
Pension benefit obligation:		
Retirees and beneficiaries		
currently receiving benefits	3,446,000	2,001,000
Current employees:		
Employer-financed vested	7,118,000	3,213,000
Employer-financed nonvested	2,814,000	4,551,000
<b>Total pension benefit obligation</b>	<b>13,378,000</b>	<b>9,765,000</b>
<b>Net assets in excess of pension benefit obligation</b>	<b>\$ 3,696,408</b>	<b>7,424,215</b>

The amount shown as the pension benefit obligation is a standardized disclosure measure of the present value of pension benefits, adjusted for the effects of projected salary increase estimated to be payable in the future as a result of employees' service to date. The measure is intended to help users assess the funding status of the system on a going concern basis, assess progress made in accumulating sufficient assets to pay benefits when due and make comparisons among systems. The measure is independent of the actuarial funding method used to determine contributions to the pension trust fund.

The pension benefit obligations were computed as part of actuarial updates performed as of January 1, 1991 and 1990 using the information contained in the January 1, 1989 actuarial valuation. The significant assumptions used in the calculation of the pension benefit obligation as of January 1, 1991 include an 8% annually compounded rate of return on present and future assets and projected salary increases of 6% per year, compounded annually. Significant actuarial assumptions used to calculate the pension benefit obligation as of January 1, 1990 include a rate of return on investment of present and future assets of 9% per year compounded annually and projected salary increases of 7% per year, compounded annually.

The increase in the pension benefit obligation from the January 1, 1990 calculation is due primarily to the change in the investment return assumption from 9% to 8%.

The Commission's funding policy has been to provide for quarterly employer contributions to the Trust Fund based upon an actuarially determined rate using the aggregate actuarial cost method. The Commission's contributions totalled approximately \$950,000 and \$990,000 in 1990 and 1989, respectively, or 5.1% and 6.7% of the covered payroll. Historical information on the Commission's pension plan is not available. Historical and other financial information on the Boston System can be found in the Boston System's June 30, 1990 financial statements.

### (8) Deposits and Investments

The Boston Water and Sewer Commission's General Revenue Bond Resolution, adopted December 6, 1984, as amended, places certain limitations on the nature of deposits and investments available to the Commission. Demand deposits and term deposits without collateralization can only be made with financial institutions meeting certain criteria. Certificates of deposit must be fully collateralized and issued by FDIC insured banks. Investments can also be made in securities issued by or unconditionally guaranteed by the U.S. Government or its Agencies; public agencies, municipalities or state obligations carrying the highest bond rating; commercial paper rates A-1; P-1, A-Rated money market funds; fully collateralized investment contracts and certain futures contracts.

In addition, the Commission's Pension Trust Fund has additional investment powers, most notably the ability to invest in stocks, corporate bonds and other instruments.

#### (a) Deposits

A summary of the amount of the Commission's deposits that are (Category 1) fully insured or collateralized with securities held by the Commission or its agent in the Commission's name, (Category 2) those deposits that are collateralized with securities held by the pledging financial institution's trust department or agent in the Commission's name and (Category 3) those deposits that are not collateralized as of December 31, 1990 follows (in thousands):

	Bank Balances			Total Bank Balance	Carrying Amount
	Category				
	1	2	3		
Cash	\$ 300	—	3,104	3,404	1,254
Money market	—	—	734	734	734
<b>Total</b>	<b>\$ 300</b>	<b>—</b>	<b>3,838</b>	<b>4,138</b>	<b>1,988</b>

#### (b) Investments

The Commission's investments are categorized according to the level of risk assumed by the Commission. Category 1 includes investments that are insured, registered or held by the Commission's trustee in the Commission's name. Category 2 includes uninsured and unregistered investments held by the counterparty's trust department or agent in the Commission's name. Category 3 includes uninsured or unregistered investments held by the counterparty, its trust department or agent but not in the Commission's name (in thousands):

	Carrying Amount			Carrying Amount	Estimated
	Category				Market
	1	2	3		Value
U.S. Government obligations	\$ 48,857	—	—	48,857	50,644
U.S. Government Agency obligations	48,624	—	—	48,624	60,235
Repurchase agreements	—	16,886	—	16,886	16,886
Money market	—	—	26,621	26,621	26,621
Other investments	—	12,557	—	12,557	12,557
<b>Total</b>	<b>\$ 97,481</b>	<b>29,443</b>	<b>26,621</b>	<b>153,545</b>	<b>166,943</b>

### (9) Lease Commitments

The Commission has entered into leases for building space under various leases expiring through 1992. These leases have been accounted for as operating leases. The Commission also leases office equipment under various leases expiring through 1995, that have also been accounted for as operating leases. Such leases are expected to be renewed as they expire in the normal course of business.

Minimum lease commitments under all leases with terms in excess of one year at December 31, 1990 are as follows:

1991	\$ 1,188,267
1992	777,107
1993	108,120
1994	108,120
1995	106,336
	<b>\$ 2,287,950</b>

Rent expense under operating leases amounted to \$1,677,000 and \$1,220,000 in 1990 and 1989, respectively.

### (10) Commitments

A major capital improvement program is currently in progress. As part of this program, the Commission has entered into a number of contracts for the design and construction of its facilities. Commitments under these contracts aggregate approximately \$47 million as of December 31, 1990. Capital improvements, primarily related to water and wastewater system projects with an emphasis on the clean-up of the Boston Harbor area, are expected to aggregate approximately \$128 million for 1991 through 1992. Of this amount, approximately \$98 million represents extension and improvement projects and \$30 million represents renewal and replacement projects. The extension and improvement projects will be 40% funded by federal and state grants. The remaining amounts will be funded from the Commission's bond proceeds and operating revenues.

### (11) Contingencies

The Commission is involved in ordinary and routine litigation and other matters related to its operations and the establishment of rates. Management believes that the resolution of these matters will not materially affect the financial position of the Commission.

The Commission has received federal and state grants for specific purposes that are subject to review and audit by the grantor agencies. Such audits could lead to requests for reimbursement to the grantor agency for expenditures disallowed under terms of the grant. The Commission believes such disallowances, if any, will not be significant.

The Commission is involved as a defendant in litigation regarding the pollution of Boston Harbor. Management believes that, except for increases in future MWRA assessments related to the litigation, the Commission's extensive capital improvement program (see note 10) addresses probable actions that the Commission may be required to undertake in connection with this litigation.

# Supplemental Schedule of Revenues and Expenses--Rate Basis

For the Years ended December 31, 1990 and 1989

	1990	1989
Revenues:		
Water revenue	\$ 59,959,305	58,568,444
Sewer revenue	76,863,354	66,683,058
Less:		
Adjustments	9,016,613	9,323,376
Discounts	759,587	566,758
Bad debt	6,485,394	5,850,715
Total	16,261,594	15,740,849
Net billed charges	120,561,065	109,510,653
Prior year surplus	6,432,956	2,996,564
Miscellaneous revenues:		
Late charge revenue	3,810,106	2,411,481
Investment income	6,266,538	5,575,137
Fire pipe revenue	1,845,393	1,678,380
Other income	2,389,516	1,421,737
Total revenues	141,305,573	123,593,952
Direct operating expenses:		
Salaries and wages	19,221,885	16,335,091
Overtime wages	1,179,909	1,108,150
Fringe benefits	2,981,876	2,900,338
Supplies and materials	1,428,448	1,247,115
Repairs and maintenance	6,350,149	4,831,816
Utilities	396,610	423,507
Professional services	2,067,094	1,617,191
Space and equipment rentals	1,681,940	1,220,120
Other services	681,434	298,075
Insurance	651,124	786,642
Damage claims	354,637	104,717
Inventory	342,672	446,411
Capital outlay	818,808	584,478
Total direct operating expenses	38,156,586	31,903,651
Nonoperating expenses:		
MWRA assessment	61,520,881	54,716,374
Capital improvements	7,148,575	3,297,843
Principal payments	3,890,000	3,115,000
Interest expense	13,732,654	9,772,770
Deposits to reserve funds	5,193,000	3,213,000
Working capital provision	1,579,199	6,294,360
Deferred interest expense	3,000,000	—
Recovery of accumulated deficit	—	4,847,998
Total nonoperating expenses	96,064,309	85,257,345
Total current expenses	134,220,895	117,160,996
Current year rate surplus	\$ 7,084,678	6,432,956

This supplemental schedule is not for financial statement purposes and does not constitute an audit. It is presented as supplemental information to the budget and operating documents.







**Boston Water and Sewer Commission**

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